



No _____ from _____

Form code USAMV–CN-0705010109

COURSE DESCRIPTION

1. Information on the programme

1.1. Higher Education Institution	University of Agricultural Sciences and Veterinary-Medicine Cluj-Napoca
1.2. Faculty	Food Science and Technology
1.3. Department	Food Engineering
1.4. Study field	Food Engineering
1.5. Level field ¹⁾	Master
1.6. Specialization/ Study Program	Systems of food processing and food quality control
1.7. Form of education	Full time

2. Information on the discipline

2.1. Name of the course	Flavors and modern flavoring systems							
2.2. Course leader	Prof. dr. Sonia Ancuța Socaci, Prof. dr. Tofană Maria							
2.3. Coordinator of seminary/laboratory activity/project	Prof. dr. Tofană Maria							
2.4. Year of study	I	2.5. Semester	II	2.6. Type of evaluation	Exam	2.7. Course regime	Content ²	DS
							Level of compulsory ³	DI

3. Total estimated time (teaching hours per semester)

3.1. Number of hours/week – frequency form	3	of which : 3.2. course	2	3.3. seminary/ laboratory/ project	1
3.4. Total hours in the curricula	42	of which: 3.5.course	28	3.6.seminary/laboratory	14
Distribution of time					Hours
3.4.1.. Study based on handbook, notes, bibliography					25
3.4.2. Extra documentation in the library, on specific electronic platforms and on field					20
3.4.3. Preparation of seminars/ laboratories/ projects, themes, papers, portfolios and essays					20
3.4.4.Tutorial					5
3.4.5. Examination					10
3.4.6. Other activities					3
3.7. Total hours of individual study	83				
3.8. Total hours per semester	125				
3.9. Number of ECTS ⁴	5				

4. Prerequisites (if applicable)

4.1. of curriculum	Physical and colloidal chemistry, Biochemistry, Food chemistry, food additives
4.2. of competences	Identification, description and appropriate use of specific concepts of food science and food safety

5. Conditions (if applicable)

5.1. of course development	Projector, ppt presentation
5.2. of seminary/laboratory/ project development	Laboratory with appropriate analytical equipment, glassware, consumables



6. Specific competences acquired

Professional competences	C2.1 Identification and use of scientific research methods in the field of agri-food sciences C2.3 Use of specific research methodologies for the development of innovative food products and technologies C2.4 Use of evaluation criteria and methods for optimizing agri-food processes
Transversal competences	CT1 Realization of complex, interdisciplinary, individual projects CT2 Realization of complex, interdisciplinary projects, with the coordination of a team

7. Subject objectives (as a result of the specific acquired competences)

7.1. Subject general objectives	Rationalizing the necessity of use of food flavoring in agrifood products and of the advanced analytical techniques of extraction and analysis
7.2. Specific objectives	Highlighting the necessity of use of natural flavoring; the presentation of the main classes of flavoring and the most important representatives; the study of the characteristics of natural flavoring as well as highlighting the allowable doses, respectively of possible toxic effects; the study of some representatives of natural flavoring food, of spices and methods of preparation and purification starting from seasoning plants who containing him

8. Contents

8.1.COURSE Number of hours – 28 Natural flavoring. History. Definitions. The physiological relevance. Natural, natural-identical and artificial products. Classical methods of extraction and analysis of flavor compounds Modern methods of extraction and analysis of flavor compounds The relationship between sensory properties and structure. Volatility. The threshold concentration. Flavoring: Individual flavor components. Acyclic and cyclic aliphatic compounds. Acyclic and cyclic terpenes. Flavoring Heterocyclic Compounds with O, O-S, S-S, N și N-S Isolation of natural flavor compounds. Volatile oils. Natural extracts. Spices The safety assessment of natural flavoring and legal aspects	Methods of teaching Lecture, heuristic conversation, debate, algorithmic, case study, directed observation Lecture, heuristic conversation, debate, algorithmic, case study, directed observation	Notes (1 lecture = 2 hours) 1lecture 2 lectures 2 lectures 2 lectures 3 lectures 2 lectures 2 lectures
8.2. PRACTICAL WORK Number of hours – 14 The preparation of samples for the extraction of aroma compounds using different extraction techniques and the physicochemical analyses of the obtained extracts. Obtaining of essential oils and the natural extracts from aromatic plants Determination of the composition of volatile oil by GC-MS Obtaining the spices' and seasoning sauces Knowledge verification.	Conversation, argumentation, debate Debate, algorithmic, case study, heuristic conversation Learning by discovery, debate, case study, conversation, argumentation	2 lectures 2 lectures 1 lecture 1 lecture 1 lecture



Compulsory Bibliography:

1. CEAUȘESCU, V.E., RĂDOIAȘ, GH., CĂDARIU, T., 1988, Odorante și aromatizante. Chimie, tehnologie, aplicații, Ed. Tehn., București.
2. Handa S.S. et al, Extraction technologies for medicinal and aromatic plants, 2008, International Center for Science and High Technology, Trieste.
3. Socaci Sonia A., A. Fărcaș, M. Tofană, 2020, Functional Ingredients derived from aromatic plants in *Feed Additives – Aromatic Plants and Herbs in Animal Nutrition and Health*, Academic Press, Elsevier, ISBN 9780128147009, <https://doi.org/10.1016/B978-0-12-814700-9.00008-X>

Facultative Bibliography:

1. BODEA, C., FĂRCAȘANU, V., NICOARĂ, E., SLUȘANSCHI, H., 1965, Tratat de biochimie vegetală, Acad RSR, (II), 1633-1634.
2. BRUNETON, J., 1994, Pharmacognozie, Phitochemie, Plantes medicinales, Ed. Tec. Doc. Londres, Paris, New York, 407-464
3. MARIA TOFANĂ, 2006, Substanțe amare și de aromă din hamei, Ed. Alma Mater, Cluj-Napoca.
4. CHAPPELL, J., 1995, The biochemistry and molecular biology of isoprenoid metabolism, Plant Physiology, 107, 1-6.
5. CHARLWOOD, B.V., 1991, K.L. in Methods in Plant Biochemistry, vol. 7, Terpenoids, Ed. B.V. Charlwood, D.V. Banthorpe, Academic Press Limited, London, 43-98.

9. Correlations between the subject against the expectations of the epistemic community representatives, of the professional associations and employers' representatives in the domain

Course content is congruent with the applications of professional national specific companies.

In order to identify ways of modernization and continuous improvement of teaching and course content with the current issues and practical problems, teachers attend the different conferences/workshops/seminars/round tables, where they meet with specialists from the private sector of food industry and with teachers from other higher education institutions in the country. Meetings aimed identifying the needs and expectations of employers in the field and to coordinate the curricula with similar programs in other higher education institutions.

10. Evaluation

Type of activity	10.1. Evaluation criteria	10.2. Evaluation methods	10.3. Percent of the final grade
10.4. Course	Logic, correct and coherent application of the concept learned	Exam	60%
10.5. Seminary/Laboratory	Ability to carry out physical and chemical analyses and to appropriate interpret the result obtained	Project presentation	40%

10.6. Minimal standard of performance

Solving a concrete problem / case study regarding the development or characterization of modern flavor/flavoring system including the argumentation of the applied methods, techniques, procedures and / or instruments.
Carrying out an individual project by efficiently using relevant and current documentation sources and resources (including internet, databases, online courses, etc.)
Obtaining the pass mark at the knowledge verification at the end of the laboratory works is a condition for obtaining an overall passing grade.

¹ Level of study- to be chosen one of the following - Bachelor/Post graduate/Doctoral

² Course regime (content) – for bachelor level it will be chosen one of the following - **DF** (fundamental subject), **DD** (subject in the domain), **DS** (specific subject), **DC** (complementary subject).

³ Course regime (compulsory level) - to be chosen one of the following - **DI** (compulsory subject), **DO** (optional subject), **DFac** (facultative subject)

⁴ One ECTS is equivalent with 25-30 de hours of study (didactical and individual study).



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Filled in on
08.09.2021

Course coordinator
Prof. dr. Sonia Socaci

Socaci Sonia

Laboratory work/seminar coordinator
Prof. dr. Maria Tofană

Prof. dr. Maria Tofană

Subject coordinator

Prof. dr. Sonia Socaci

Socaci Sonia

Approved by the
Department on
22.09.2021

Head of the Department
Prof. dr. Ramona Suharoschi

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Approved by the Faculty
Council on
28.09.2021

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Prof. dr. Elena Mudura

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